

In the Claims:

Please cancel claims 1 – 35 without prejudice or disclaimer of the subject matter thereof, and add the following new claims as indicated below.

1 – 35 (Canceled).

1 36 (New). A firearm laser training system enabling a user to project a laser beam toward
2 a target to simulate firearm operation comprising:

3 a sensing device to scan said target to produce scanned images of said target including impact
4 locations of said laser beam on said target; and

5 a processor to process said scanned images including said impact locations, wherein said
6 processor includes:

7 a density module to determine pixel density values for pixels within said scanned
8 images, wherein said pixel density value for a scanned image pixel is determined by combining
9 component pixel values for that pixel; and

10 a detection module to identify said impact locations within said scanned images
11 based on said pixel density values of pixels within said scanned images exceeding a threshold.

1 37 (New). The system of claim 36, wherein said component pixel values for each pixel
2 within said scanned images include values associated with Red (R), Green (G) and Blue (B) pixel
3 components, and said pixel density value for that pixel is determined by:

4 Pixel Density = (Red value x Weight1) + (Green value x Weight2) + (Blue value x Weight3);
5 wherein Weight1, Weight2 and Weight3 are weighting values.

1 38 (New). The system of claim 36, wherein said detection module includes a group
2 location module to compare pixel density values of scanned image pixels to said threshold to identify
3 a group of pixels within a scanned image where each group member pixel includes a pixel density
4 value exceeding said threshold.

1 39 (New). The system of claim 38, wherein said detection module further includes an
2 impact location module to determine the scanned image pixel positioned at a center of said group
3 and representing said impact location.

1 40 (New). The system of claim 39, wherein said detection module further includes a
2 coordinate module to determine coordinates of said pixel representing said impact location.

1 41 (New). The system of claim 36, wherein said target includes a plurality of zones each
2 representing an intended target site and associated with a score value, and said processor further
3 includes:

4 a scoring module to determine impact scores, wherein each impact score is associated with a
5 detected impact location and based on said score value of said zone containing that detected impact
6 location.

1 42 (New). The system of claim 36 further including a display to display an image of said
2 target with indicia indicating said detected impact locations.

1 43 (New). The system of claim 36, wherein said processor further includes:
2 a threshold module to automatically adjust said threshold in response to measured light
3 conditions of a surrounding environment.

1 44 (New). A firearm laser training system enabling a user to project a laser beam toward
2 a target to simulate firearm operation comprising:
3 a sensing device to scan said target to produce scanned images of said target including impact
4 locations of said laser beam on said target, wherein said sensing device is positioned relative to said
5 target to produce said scanned images with an angled perspective of said target; and
6 a processor to process said scanned images including said impact locations, wherein said
7 processor includes a detection module to compensate for said angled perspective and identify said
8 impact locations within said scanned images.

1 45 (New). The system of claim 44, wherein said scanned images include a trapezoidal
2 field of view of said target.

1 46 (New). The system of claim 44, wherein said sensing device is positioned below said
2 target.

1 47 (New). The system of claim 44, wherein said processor further includes a calibration
2 module to correlate a target space associated with said target with a target space associated with said
3 scanned target images.

1 48 (New). The system of claim 44, wherein said processor further includes a coordinate
2 module to determine coordinates within said scanned images of said impact locations.

1 49 (New). The system of claim 44, wherein said sensing device includes said processor
2 and said processor further includes a coordinate module to determine coordinates within said
3 scanned images of said impact locations.

1 50 (New). The system of claim 49, wherein said sensing device is a camera.

1 51 (New). The system of claim 44, wherein said target includes a plurality of zones each
2 representing an intended target site and associated with a score value, and said processor further
3 includes:

4 a scoring module to determine impact scores, wherein each impact score is associated with a
5 detected impact location and based on said score value of said zone containing that detected impact
6 location.

1 52 (New). The system of claim 44 further including a display to display an image of said
2 target with indicia indicating said detected impact locations.

1 53 (New). A firearm laser training system enabling a user to project a laser beam toward
2 a target to simulate firearm operation comprising:

3 a sensing device to scan said target to produce scanned images of said target including impact
4 locations of said laser beam on said target; and

5 a processor to process said scanned images including said impact locations and determine
6 said impact locations on said target, wherein said processor includes a Universal Serial Bus (USB)
7 port and said sensing device includes a camera directly compatible with and coupled to said USB
8 port.

1 54 (New). The system of claim 53, wherein said camera includes a scanning interval
2 greater than a pulse duration of said laser beam.

1 55 (New). The system of claim 53, wherein said sensing device includes a CMOS type
2 camera.

1 56 (New). The system of claim 53, wherein said processor includes a coordinate module
2 to determine coordinates within said scanned images of said detected impact locations.

1 57 (New). The system of claim 53, wherein said target includes a plurality of zones each
2 representing an intended target site and associated with a score value, and said processor further
3 includes:

4 a scoring module to determine impact scores, wherein each impact score is associated with a
5 detected impact location and based on said score value of said zone containing that detected impact
6 location.

1 58 (New). The system of claim 53 further including a display to display an image of said
2 target with indicia indicating said detected impact locations.

1 59 (New). In a firearm simulation system enabling a user to project a laser beam toward a
2 target and including a sensing device and a processor, a method of simulating firearm operation
3 comprising:

4 (a) scanning said target with said sensing device to produce scanned images of said target
5 including impact locations of said laser beam on said target; and

6 (b) processing said scanned images including said impact locations via said processor,
7 wherein said processing includes:

8 (b.1) determining pixel density values for pixels within said scanned images,
9 wherein said pixel density value for a scanned image pixel is determined by combining component
10 pixel values for that pixel; and

11 (b.2) identifying said impact locations within said scanned images based on said

12 pixel density values of pixels within said scanned images exceeding a threshold.

1 60 (New). The method of claim 59, wherein said component pixel values for each pixel
2 within said scanned images include values associated with Red (R), Green (G) and Blue (B) pixel
3 components, and step (b.1) further includes:

4 (b.1.1) determining said pixel density value for a scanned image pixel in accordance with:

5 $\text{Pixel Density} = (\text{Red value} \times \text{Weight1}) + (\text{Green value} \times \text{Weight2}) + (\text{Blue value} \times \text{Weight3});$

6 wherein Weight1, Weight2 and Weight3 are weighting values.

1 61 (New). The method of claim 59, wherein step (b.2) further includes:

2 (b.2.1) comparing pixel density values of scanned image pixels to said threshold to identify a
3 group of pixels within a scanned image where each group member pixel includes a pixel density
4 value exceeding said threshold.

1 62 (New). The method of claim 61, wherein step (b.2) further includes:

2 (b.2.2) determining the scanned image pixel positioned at a center of said group and
3 representing said impact location.

1 63 (New). The method of claim 62, wherein step (b.2) further includes:

2 (b.2.3) determining coordinates of said pixel representing said impact location.

1 64 (New). The method of claim 59, wherein said target includes a plurality of zones each
2 representing an intended target site and associated with a score value, and step (b.2) further includes:
3 (b.2.1) determining impact scores, wherein each impact score is associated with a detected
4 impact location and based on said score value of said zone containing that detected impact location.

1 65 (New). The method of claim 59 further including:
2 (c) displaying an image of said target with indicia indicating said detected impact
3 locations on a display.

1 66 (New). The method of claim 59, wherein step (b) further includes:
2 (b.3) automatically adjusting said threshold in response to measured light conditions of a
3 surrounding environment.

1 67 (New). In a firearm simulation system enabling a user to project a laser beam toward a
2 target and including a sensing device and a processor, a method of simulating firearm operation
3 comprising:

4 (a) scanning said target with said sensing device to produce scanned images of said target
5 including impact locations of said laser beam on said target, wherein said sensing device is
6 positioned relative to said target to produce said scanned images with an angled perspective of said
7 target; and

8 (b) processing said scanned images including said impact locations via said processor to

9 compensate for said angled perspective and identify said impact locations within said scanned
10 images.

1 68 (New). The method of claim 67, wherein said scanned images include a trapezoidal
2 field of view of said target.

1 69 (New). The method of claim 67, wherein said sensing device is positioned below said
2 target.

1 70 (New). The method of claim 67, wherein step (b) further includes:
2 (b.1) correlating a target space associated with said target with a target space associated
3 with said scanned target images.

1 71 (New). The method of claim 67, wherein step (b) further includes:
2 (b.1) determining coordinates within said scanned images of said impact locations.

1 72 (New). The method of claim 67, wherein said sensing device includes said processor
2 and step (b) further includes:
3 (b.1) determining coordinates within said scanned images of said impact locations.

1 73 (New). The method of claim 72, wherein said sensing device is a camera.

1 74 (New). The method of claim 67, wherein said target includes a plurality of zones each
2 representing an intended target site and associated with a score value, and step (b) further includes:
3 (b.1) determining impact scores, wherein each impact score is associated with a detected
4 impact location and based on said score value of said zone containing that detected impact location.

1 75 (New). The method of claim 67 further including:
2 (c) displaying an image of said target with indicia indicating said detected impact
3 locations on a display.

1 76 (New). In a firearm simulation system enabling a user to project a laser beam toward a
2 target and including a sensing device and a processor, a method of simulating firearm operation
3 comprising:

4 (a) scanning said target with said sensing device to produce scanned images of said target
5 including impact locations of said laser beam on said target; and

6 (b) processing said scanned images including said impact locations via said processor and
7 determining said impact locations on said target, wherein said processor includes a Universal Serial
8 Bus (USB) port and said sensing device includes a camera directly compatible with and coupled to
9 said USB port.

1 77 (New). The method of claim 76, wherein said camera includes a scanning interval
2 greater than a pulse duration of said laser beam.

1 78 (New). The method of claim 76, wherein said sensing device includes a CMOS type
2 camera.

1 79 (New). The method of claim 76, wherein step (b) further includes:
2 (b.1) determining coordinates within said scanned images of said detected impact locations.

1 80 (New). The method of claim 76, wherein said target includes a plurality of zones each
2 representing an intended target site and associated with a score value, and step (b) further includes:
3 (b.1) determining impact scores, wherein each impact score is associated with a detected
4 impact location and based on said score value of said zone containing that detected impact location.

1 81 (New). The method of claim 76 further including:
2 (c) displaying an image of said target with indicia indicating said detected impact
3 locations on a display.